GEOTHERMAL ENERGY ASSOCIATION

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April 4, 2008

Mr. Ryan Pletka
Black & Veatch Corporation
2999 Oak Rd, Suite 490
Walnut Creek, CA 94597

Subject: Geothermal Energy Association's Comments to the RETI Phase 1A Draft Report

Dear Ryan:

Attached are the comments of the Geothermal Energy Association (GEA) and those of several of our member companies on the Renewable Energy Transmission Initiative (RETI) Phase 1A Draft Report. A lot of good work and thinking has gone into the March 2008 draft of the Report. We commend the authors and contributors on their efforts to date.

<u>GEA Comments</u>

In my role as a member of the stakeholder steering committee (SSC), I have had the good fortune of receiving technical and policy input from several GEA member-companies over the last four months. I have several overarching comments on behalf of GEA, and I have also attached the specific comments of two member-companies (Calpine Corporation and Vulcan Power Company). I urge you to look very carefully at their detailed comments of the Phase 1A Report, and believe that each company has raised very valid concerns in their analysis.

1. The RETI Process

GEA and our member companies are committed to full participation in the RETI process, and we hold out hope that it will meet its stated mission, goals and objectives. As the process has evolved, we have seen greater clarity and specificity as to how this process could potentially fit in and bolster California's existing transmission planning and permitting efforts for renewable power, and the electricity grid as a whole. We look forward to working with B&V to get to a much greater level of clarity and detail on the location and generation potential of new "competitive renewable energy zones" (CREZ's) in the Phase 1B process.

2. Technologies Performance and Cost Summaries

Data and methodologies for analysis must not inadvertently favor one renewable industry over another just because the RETI process has not gathered or analyzed the best available scientific or industry data. As you will see from company comments below, the "Renewable Technologies Performance and Cost Summary" Table 1.1 is currently flawed in several key respects (i.e. capacity factor for geothermal is way too low, fixed O&M costs need substantiating, etc.) and needs substantial revision and refinement.

As pointed out by Southern California Edison (SCE) in their comment letter, the cost ranges associated with many of the renewable technologies are not representative of the bids that IOU's and other power purchasers have received, and the range of costs is so wide on some cases as to render analysis quite difficult. Can RETI please document in more detail where it obtained data for its fixed O&M and other cost figures?

3. Transmission Base Case Analysis
The internal debate over the extent of the transmission "base case" is still not resolved successfully. As pointed out in the comments of the Vulcan Power Company, the decision by the Coordinating Committee to deviate from a base case methodology that requires full approval by **all** necessary regulatory agencies results in a very real problem: assumption of power generation and transmission approval counted towards RPS compliance that is years away from being available to market, and that still has several critical regulatory hurdles to clear.

GEA wants to be crystal clear: we are in no way judging the efficacy or suitability of particular renewable energy transmission projects such as the latter phases of the Tehachapi wind project, the Sunrise Powerlink Project or the Devers-Palo Verde 2 Project. We are merely stating (as we have repeatedly in our participation in the SSC and the B&V Phase 1A Working Group) that including generation or transmission in the "base case" that has not reached a justifiable level of certainty ***can and will*** bias the overall calculation of how much of a gap there is between California's RPS goals and current versus potential generation. Why are we willing to do this? How can we justify these seemingly case specific decisions when fairness and transparency dictate having a consistent standard for measuring base case inclusion? GEA strongly recommends that the RETI process return to the transmission assumptions included in the February 28, 2008 B&V Work Group Meeting 5 summary (page 9).

Calpine Corporation Comments

1. Capacity Value
The Capacity Value formula presented on Page 3-28 yields what we believe may be misleading results about the value of the capacity provided by each renewable technology. As we understand the formula, it calculates the value of the capacity provided by the renewable resource during the summer peak period but spreads that value over all MWhs assumed to be generated by the resource over a year. This formulation of capacity value results in a lower value for biomass and geothermal than solar despite biomass and geothermal delivering more capacity in the relevant peak periods. We believe this outcome is somewhat misleading.

We propose that Capacity Value formula be modified as follows

Capacity Value ($/kW-yr) = (Capacity Credit) x (Baseline Capacity Value)

In addition, the last 2 lines of Table 3-9 should be deleted.

We also believe that the ranking formula presented on Page 3-31 needs to reflect the fact that the Capacity Value is only relevant at the summer peak periods and that levelizing this value over all MWh produce by the resource in a year will result in misleading rankings and thence inappropriate decisions.

The RETI evaluation also needs to be cognizant of the ongoing concern over the failure of wind resources to meet their expected capacity credit levels when needed. The CPUC's Resource Adequacy proceeding is reviewing this concern. RETI should pay particular attention to the this concern and may need to adopt a more conservative estimate of the capacity credit for wind given its purpose of planning very expensive transmission investment projects.

2. Geothermal technologies

On page 5-35, we suggest the report also reference the dry steam technology among the types of geothermal technologies used in California.

3. Integration Costs

Per the comments of Vulcan Power Company, GEA believes that we simply must have some sort of factoring or valuation of integration costs. To see a recent example of how these costs are being calculated, we refer you to the recent action of the Bonneville Power Administration (*"BPA's Wind Integration Within-Hour Balancing Service (Wind Integration) rate proposal")*:

For more than a year, the Bonneville Power Administration has tried to put a price tag on managing the flightiness of wind. Earlier this week, the federal power marketer settled on a figure: 68 cents a kilowatt month or $2.82 a megawatt hour.

The 68 cents per KW per month is = to $680 / MW / month, which, assuming 0.33 capacity factor is = to $2.82 / MWhr.[1]

Vulcan Power Company Comments

1. RETI report resource potential table 1-2

The Geothermal potential in Nevada should be 2500, not 1488 MW. Governor Gibbon's Renewable Energy Transmission Access Advisory Committee released their transmission report on January 25, 2008, which is now posted on the web at http://gov.state.nv.us/Energy/ which states there is 2500 MW of energy that couldbe produced using conventional technologies. (See Press Release at end of this document for more details.)

2. RETI table 1-1

Geothermal Capacity factor should be 95 not 70-90, and the 25-30 variable O&M is too high.

3. RETI report page 3-13, Table 3-6 (base case transmission) should not include the 2013 phases of the Tehachapi transmission.

CPUC Decision 04-06-010 June 9, 2004, **INTERIM OPINION ON TRANSMISSION NEEDS, IN THE TEHACHAPI WIND RESOURCE AREA,** At page 33 states:

> *We agree with SCE that Tehachapi wind development should not receive special treatment in the RPS process, in that the costs of needed transmission upgrades should not be masked or other steps taken to give Tehachapi developers an unfair advantage.*

Including the later phases of the Tehachapi transmission in the base case will do just that: mask costs and give the Tehachapi developers an unfair advantage. The phases listed for 2013 should be dropped from the base case.

[1] Per the BPA testimony at https://secure.bpa.gov/ratecase/openfile.aspx?fileName=2009%20Wind%20Integration%20Rate%20Case%20Revised%20Proposal.pdf&contentType=application/pdf

Alternatively, perhaps preferably, the cost of all of the transmission in Table 3-6 should be added to the cost of generators in a CREZ associated with each of the lines. Any part of the cost that isn't sunk should be included in CREZ ranking determination.

The Tehachapi transmission plan provides for over 4000 MW of wind generation. The mere fact that a planning study has been carried out for a given region does not make that the one with the most beneficial potential resource, but the omission of the cost of the proposed transmission could make it appear to be so. Kind of a self fulfilling prophecy. The cost of transmission planned for such areas must be included just as for other CREZs to arrive at a fair, unbiased ranking of all CREZs.

4. RETI report page 3-2, Base Case Definition

There is a need for Coordination with other transmission planning activities.

The report does not say whether it will consider the upgrades already assigned to generators in the ISO queue in the base case or if not, how such upgrades will be treated if redundant to RETI proposed transmission. This is an important point and could have material impact on a generator's strategic business decisions. If RETI concludes there is a need for new transmission to a region where an ISO SIS has previously indicated that a generator in the queue should be prepared to finance network upgrades, will the generator be relieved of the SIS financing obligation?

It is also not entirely clear how the RETI will be coordinated with CAISO LCRI and GIPR initiatives. For example, would a RETI recommended line be treated as a PTO sponsored LCRIF in the CAISO planning process? Will a line need developed out of GIPR for multiple types of resources be coordinated with a RETI recommendation that considers only renewable resources?

Will non-CAISO transmission projects like the LADWP Green Path, and TID/SMUD proposed transmission upgrades be included in the base case?

5. RETI page 3-24, para 3.6.3

Wheeling Charges The addition of "pancaked" wheeling charges to the cost of a resource should done if the generator will connect to an out of state utility grid. However, to the extent that RETI develops plans for new transmission to access an out of state location like western Nevada, there is no reason to assume the generators would pay Sierra Pacific or Nevada Power a wheeling charge rather than build their own generator-tie to meet directly with the new RETI transmission.

Generators in eastern Nevada, or those connecting to say CFE, PacCorp, BPA, etc. grids will have to pay such charges, and some in Washington, or Canada may have to pay several pancaked wheeling charges to get to CA. In situations like this, the addition of wheeling charges is appropriate.

Generators connecting to the control area grid of the ultimate buyer (ISO grid for anyone selling to an ISO participant) should not be burdened with more than the ISO TAC (transmission Access Charge). Note: unlike wheeling charges, the ISO TAC does not include a loss charge, so loss charge components of wheeling charges should probably not be added.

This topic needs a lot more thought and explanation if stakeholders are to understand what is being done by B & V.

6. RETI Table 3-7

For non-CA resource connecting to CAISO it will be assumed that the generator is connecting via a 500 kV line with pro-rata cost allocation. This will not always be appropriate. A DC line, or a staged DC expansion as Vulcan has laid out in its G3Plan (see G3Plan.com) a "green tap" to the PDCI might be the most cost effective, least environmental impact way to deliver geothermal power from Nevada to Ca load centers.

7. RETI para 3.7, page 3-24 and Table 3-8, Resource valuation

The valuation should account for quantifiable economic benefits of new transmission. For example, it is known that some interties and other locations have very high ISO GMMs and TMMs. New high voltage transmission in these cases will both provide access for additional new generation and lower the GMM and TMM effectively increasing capacity and energy from existing and new generation. It is also likely that a new high voltage line will eliminate or reduce existing congestion and the associated societal cost.

Also, to the extent that some renewable resources will offset more greenhouse gases emissions than others, this could and should be quantified and valued.

8. RETI para 3.7.3

Failure to use Integration Cost of any kind could result in coming up with the wrong ranking. What is the basis for the claim that these costs will be relatively small compared to other costs given that, as is admitted in the report, there is no study yet. At a minimum, if there are any close calls in ranking between intermittent resources and other resources, recognition that including Integrations Cost might have reversed the ranking would dictate that close scoring lower ranked CREZs should be treated as equal rank.

9. RETI para 3.7.5 Energy Value

The production cost model or "independent price forecast" , even if based on zones rather than nodes, should be one that reflects marginal cost pricing of congestion and losses as will be done in the CAISO MRTU. The CAISO is the major sink for renewable supply coming into CA. and realistic modeling is necessary to obtain a realistic result.

10. RETI table 3-9, page 3-29

The arithmetic for Capacity Value appears to be in error. The Capacity Values for wind and solar appear to be based on the product of the Annual Capacity Factor Credit % times Baseline Capacity Value but the Capacity Value for geothermal and biomass are not close to this product. This should be corrected so as not to present a misleading value for geothermal and biomass generation.

11. RETI table 3-13

Why divide these generators into sub groups and plan transmission on that basis for a case like this example. It makes more sense to plan one large upgrade for the entire CREZ. The Tehachapi area study needed to consider all 4400 MW at one time to arrive at a satisfactory plan. This practice should be continued.

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12. RETI economic assumptions

The pro forma financial model (spreadsheet?) should be made available for examination by stakeholders to satisfy themselves there are no unintended biases in the cost determination.

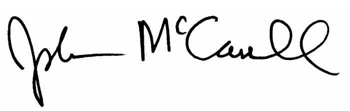
13. RETI Table 4-1 Financing assumptions
Geothermal, and possibly other generator types, should have an 80/20 debt:equity ratio, not 60/40.

14. RETI section 4.1, page 4-4
Combined federal and state income tax rate of 40% is too high for Nevada which has a different business tax structure.

Conclusion

GEA and our member companies are fully committed to seeing the RETI process through to its conclusion. We have a significant interest in getting some very specific information into the CREZ identification and ranking process, and we look forward to working with Black and Veatch and the RETI stakeholders in the months to come. Please contact me at 530/979-7586 or john@geo-energy.org if you have any questions about our comments on the Phase 1A Report.

Sincerely,



John McCaull
Western States Representative

Press Release – February 5, 2008

Governor Gibbon's Renewable Energy Transmission Access Advisory Committee released their transmission report on January 25, 2008, which is now posted on the web at http://gov.state.nv.us/Energy/ . This report is an important contribution as it notes the locations of renewable energy resources, their relation to power lines available to transmit the power to population centers, and the locations where transmission lines are needed. Governor Gibbons has consistently pledged his support for renewable energy development and stated such at the 2007 Geothermal Resources Council meeting where he was a keynote speaker: "Now as governor, let me say that I'm continuing my record of support for the development of renewable energy at the state level."

The Great Basin Center for Geothermal Energy (GBCGE) was an important contributor to the report in that it provided the geothermal resource maps from which derivative maps were prepared. A beta version of all of the renewable interactive maps can be found at the GBCGE website: http://www.unr.edu/geothermal/renewables.htm . These maps show geothermal, solar, wind and biomass potential in Nevada along with land ownership and land restrictions. This beta version of the interactive maps is currently being migrated to a newer, faster server and software combination to increase the speed of use of the maps.

These maps show there is tremendous potential for renewable energy development in Nevada. In the summer of 2005, the GBCGE hosted a Western Governor's Association workshop to determine the amount of geothermal power immediately available with known resources and existing technologies. It was estimated that there was 1500 MW of power that could be developed by 2015. Based on additional resources located through applied research projects at the GBCGE since 2005, it is currently estimated that there is a minimum of 2500 MW of energy that could be produced using conventional geothermal resources in Nevada with existing technologies. Some of these newly located resources were leased by the BLM during their most recent lease sale in August, 2007, which generated a total of $11.7 M, 75% of which is returned to the state of Nevada. This 2500 MW of new geothermal energy generation will be an important contributor to the energy supply of Nevada, which has an aggressive renewable portfolio standard that requires Sierra Pacific and Nevada Power Companies to produce 20% of their power from renewable energy by 2015.

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